

Application No. 09/715,935

REMARKS

Claims 18-38 and 62-73 are pending. By this amendment, claims 18, 27 and 33 are amended to more particularly point out Applicants' claimed invention. Claims 39-54 and 56-61 are canceled without prejudice. New claims 62-73 are added. Claim 27 has been amended to make the claim into an independent claim. The specification supports the amendment of claim 18, for example, at page 56, line 20 to page 57, line 2. The specification supports the amendment of claim 33, for example, at page 14, line 33 to page 15, line 7, Fig. 20 and the Example.

New claim 62-64 and 68-70 are supported by claims 20-22, as filed. The specification supports new claims 65 and 66, for example, at page 42, lines 20-23. The specification supports new claim 67, for example, at claim 1 as filed and at page 12, line 28 to page 13, line 14, page 50, lines 24-26, and page 57, lines 12-18. The specification supports claims 71-73, for example, at page 62, line 24 to page 63, line 17. No new matter is introduced by the claim amendments or new claims.

The Board of Patent Appeals and Interferences reversed the rejection of claim 27. This claim has been rewritten as an independent claim. New claims 62-66 depend from claim 27, and the patentability of these claims should correspondingly follow directly from the Board decision. With respect to pending claims 18-26 and 28-38, Applicants respectfully request reconsideration of the rejections based on the above amendments and the following remarks.

Rejections Over Akedo et al., Bi et al. and Rao et al.

The Examiner rejected claims 18-29, 33-42, 44, 46-51, 55-57 and 59-61 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,280,802 to Akedo et al. (the Akedo patent), in view of U. S. Patent 5,958,348 to Bi et al. (the Bi patent) and U.S. Patent 5,874,134 to Rao et al. (the Rao patent). The Board reversed this rejection with respect to claims 27 and 42. Claims 39-

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42, 44, 46-51, 55-57 and 59-61 have been canceled without prejudice. Thus, claims 18-26, 28, 29 and 33-38 stand rejected. Applicants have amended claims 18 and 33 to more particularly point out Applicants' claimed invention. In view of the amendments, the combined teachings of Akedo, Bi and Rao do not render Applicants' claimed invention *prima facie* obvious. Applicants further comment on the new independent claims. Applicants respectfully request reconsideration of the rejection based on the following comments.

Claim 18 and Dependent Claims

As amended claim 18 specifies that the coating comprises fused particles. Bi clearly teaches away from forming a coating of fused particles since the entire objective of the process of the Bi patent is to harvest high quality particles as a powder. Also, Akedo teaches away from such an embodiment. See the Akedo abstract ("without being fused"), column 3, lines 4-12 ("without causing fusing or decomposition of the ultrafine particles"), column 4, lines 1-7, where it is taught to be undesirable to fuse the particles, and throughout Akedo. The Rao patent teaches the formation of nanostructured material through the use of a hypersonic jet. The Akedo patent and the Bi patent explicitly teach away from a combination with the Rao patent for the formation of a fused particle coating. Since the Akedo patent and the Bi patent explicitly teach away from the combination, the combined teachings of the Akedo patent, the Bi patent and the Rao patent clearly do not render claim 18 *prima facie* obvious.

Claim 33 and Dependent Claims

As amended, claim 33 recited that the process forms a coating over the entire substrate in a single pass. The Bi patent and the Rao patent do not teach moving the substrate. The Akedo patent does not teach or suggest coating a substrate through one pass of a substrate relative to an elongated reactant stream. Therefore, the cited references alone or combined clearly do not teach all of the features of claim 33. Thus, the combined teachings of the Akedo patent, the Bi patent and the Rao patent do not render claim 33 *prima facie* obvious.

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Claim 67 and Dependent Claims

Claim 67 is directed to a coating process in which the process is controlled to deposit coating material only over a selected portion of the substrate. Then, the coated substrate is heated to form a patterned dense coating material. None of the cited references alone or combined teach or suggest either of these process steps. All of the cited references teach away for this claimed process. Therefore, the combined teachings of the Akedo patent, the Bi patent and the Rao patent clearly do not render claim 67 *prima facie* obvious.

Claim 71

Claim 71 recites the deposition of two coating layers and the heat treatment to form two dense coating layers. None of the cited references alone or combined teach either of these steps. more particularly, all of the cited references teach away from this claimed process. Therefore, the combined teachings of the Akedo patent, the Bi patent and the Rao patent clearly do not render Applicants' claimed invention *prima facie* obvious.

Summary

Since the combined teachings of the cited references do not render Applicants' claimed invention *prima facie* obvious, Applicants respectfully request withdrawal of the rejection of claims 18-29, 33-42, 44, 46-51, 55-57 and 59-61 under 35 U.S.C. § 103(a) as being unpatentable over the Akedo patent, in view of the Bi patent and the Rao patent.

Rejection Over Lehman, Akedo et al., Bi et al., Rao et al. and Kambe et al.

The Examiner rejected claims 30, 43, 45, 52 and 58 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,097,144 to Lehman (the Lehman patent) in view of the Akedo patent, the Bi patent and the Rao patent, further in view of WO 99/23189 (the Kambe application). Claims 43, 45, 52 and 58 have been canceled. Claim 30 depends from claim 18, which has been amended to recite a coating with fused particles. The Examiner cited the

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Lehman patent for its disclosure relating to glass coatings. The Examiner cited the Kambe patent for teaching nanoscale particles of silicon dioxide and metal oxides. The deficiencies of the combined disclosures of the Akedo patent, the Bi patent and the Rao patent with respect to Applicants' presently claimed invention were described in detail above. The Lehman patent and the Kambe application do not make up for the deficiencies of the Akedo patent, the Bi patent and the Rao patent. Applicants respectfully request reconsideration of the rejection based on the following comments.

The Lehman patent is cited for teaching glass coatings, and the Kambe application is cited for teaching that laser pyrolysis is capable of producing glass materials. The Kambe application teaches a similar apparatus and process as disclosed in the Bi patent, which has overlapping inventors with the Bi patent. Thus, the Kambe patent does not add significantly any further broad teaching toward the presently claimed invention beyond the teachings of the Bi patent. The Lehman patent does not teach or suggest particle production or particle deposition to form a coating. Thus, the Lehman patent clearly does not make up for the deficiencies of the Akedo patent, the Bi patent and the Rao patent with respect to Applicants' claimed invention. The Akedo patent, the Bi patent and the Rao patent alone or combined do not teach or suggest moving a substrate relative to a product stream to form a coating of fused particles, and the Akedo patent and the Bi patent clearly teach away from this invention. Since the Kambe application and the Lehman patent do not make up for the deficiencies of the Akedo patent, the Bi patent and the Rao patent with respect to Applicants' claimed invention, the combined disclosures of the Lehman patent, the Akedo patent, the Bi patent, the Rao patent and the Kambe application does not render Applicants' claimed invention *prima facie* obvious.

Applicants respectfully request withdrawal of the rejection of claims 30, 43, 45, 52 and 58 under 35 U.S.C. § 103(a) as being unpatentable over the Lehman patent in view of the Akedo patent, the Bi patent and the Rao patent, further in view of the Kambe application.

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Rejections Over Akedo et al., Kambe et al., and Rao et al.

The Examiner rejected claims 18-29, 33-52 and 55-61 under 35 U.S.C. §103(a) as being unpatentable over the Akedo patent in view of the Kambe application and the Rao patent. Applicants have amended claim 18 and 33 to more particularly point out their claimed invention. Claims 38-52 and 55-61 have been canceled. The Board reversed the rejection of claim 27. The Board, the Examiner and Applicants all seem to agree that the Kambe application essentially teaches an equivalent process as the Bi patent. Since the combined disclosures of the Akedo patent, the Bi patent and the Rao patent do not render Applicants' presently claimed invention *prima facie* obvious, the combined disclosures of the Akedo patent, the Kambe application and the Rao patent similarly do not render Applicants' claimed invention *prima facie* obvious for the reasons discussed in detail above. Applicants respectfully request withdrawal of the rejection of claims 18-29, 33-52 and 55-61 under 35 U.S.C. §103(a) as being unpatentable over the Akedo patent in view of the Kambe application and the Rao patent.

Rejection Over Lehman, Akedo et al., Kambe et al. and Rao et al.

The Examiner rejected claim 30 under 35 U.S.C. §103(a) as being unpatentable over the Lehman patent in view of the Akedo patent, the Kambe application and the Rao patent. Claim 30 depends from claim 18. The Lehman patent does not teach or suggest particle formation or particle deposition. Therefore, the Lehman patent does not make up for the deficiencies of the combined disclosures of the Akedo patent, the Kambe application and the Rao patent with respect to claim 18 and correspondingly claim 30. Since the combined disclosures of the cited references do not render claim 30 *prima facie* obvious. Applicants respectfully request withdrawal of the rejection of claim 30 under 35 U.S.C. §103(a) as being unpatentable over the Lehman patent in view of the Akedo patent, the Kambe application and the Rao patent.

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Rejection Over Tran et al., Lehman, Akedo et al., Bi et al., Rao et al. and Kambe et al.

The Examiner rejected claims 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over U.S. patent 6,074,888 to Tran et al. (the Tran patent) in view of the Lehman patent and further in view of the Akedo patent, the Bi patent and the Rao patent, in view of the Kambe application. The Examiner cited the Tran patent for disclosing optical components. Claims 31 and 32 depend from claim 18. In view of the amendment of claim 18, the combined disclosures of the Akedo patent, the Bi patent and the Rao patent clearly do not render claim 18 *prima facie* obvious. Furthermore, it was noted that the Kambe application and the Lehman patent do not make up for the deficiencies of the Akedo patent, the Bi patent and the Rao patent with respect to teaching the subject matter of claim 18. The Tran patent refers to "known epitaxy techniques" for depositing optical materials. See, for example, column 3, lines 24-27. The Tran patent does not teach deposition approaches that make up for the deficiencies of combining the teachings of the Akedo patent, the Bi patent and the Rao patent to obtain Applicants' claimed invention. Thus, the combined disclosures of the Tran patent, the Lehman patent, the Akedo patent, the Bi patent, the Rao patent and the Kambe application do not render Applicants' claimed invention *prima facie* obvious. Applicants respectfully request withdrawal of the rejection of claims 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over the Tran patent in view of the Lehman patent and further in view of the Akedo patent, the Bi patent and the Rao patent, in view of the Kambe application.

Rejection Over Tran et al., Lehman, Akedo et al., Kambe et al., Rao et al.

The Examiner rejected claims 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over the Tran patent in view of the Lehman patent and further in view of the Akedo patent, the Kambe application and the Rao patent. As noted above, the combined disclosures of the Tran

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patent, the Lehman patent, the Akedo patent, the Bi patent, the Rao patent and the Kambe application do not render claims 31 and 32 *prima facie* obvious. For the same reasons, the combined disclosures of the Tran patent, the Lehman patent, the Akedo patent, the Kambe application and the Rao patent do not render claims 31 and 32 *prima facie* obvious. Applicants respectfully request withdrawal of the rejection of claims 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over the Tran patent in view of the Lehman patent and further in view of the Akedo patent, the Kambe application and the Rao patent.

Rejection Over Börner et al., Bi et al. and Rao et al.

The Examiner rejected claims 18-29, 33-42, 47-51, 53-57 and 59-61 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,032,871 to Börner et al. (the Börner patent) in view of the Bi patent and the Rao patent. Claims 39-42, 47-51, 53-57 and 59-61 have been canceled without prejudice. Applicants have amended claims 18 and 33. The Board reversed the rejection of claim 27. In view of the amendments, it is clear that the cited references do not render Applicants' claimed invention *prima facie* obvious. Applicants respectfully request reconsideration of the rejections.

Claim 18 and Dependent Claims

Claim 18 recited the deposition to form a coating of fused particles. As noted above, the Bi patent teaches away from such a coating process. The Börner patent does not teach the properties of the coating. Rao does not teach moving the substrate, and since the Bi patent teaches away from the combination, there is clearly no motivation to combine the Bi patent with Rao with respect to the presently claimed invention.

Since the Bi patent explicitly teaches away and none of the references alone or combined teach moving the substrate relative to a flow, the combined teachings of the Börner patent, the Bi patent and the Rao patent clearly do not render Applicants' claimed invention *prima facie*

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obviousness. Applicants respectfully request withdrawal of the rejection of claims 18-29, 33-42, 47-51, 53-57 and 59-61 under 35 U.S.C. §103(a) as being unpatentable over the Börner patent in view of the Bi patent and the Rao patent.

Claim 33 and Dependent Claims

Claim 33 recites an elongated reactant stream and the movement of the flow relative to the substrate to coat the entire substrate in one pass. The Bi patent does not teach, suggest or motivate movement of the flow relative to a substrate. The Börner patent similarly does not teach or suggest moving the substrate relative to a flow. Also, the Rao patent does not teach or suggest moving a coating flow relative to a substrate. Since none of the references alone or combined teach or suggest moving a coating flow relative to a substrate, it is difficult to see how they teach or suggest moving a coating flow to coat an entire substrate in one pass. Therefore, the combined teachings of the Börner patent, the Bi application and the Rao patent clearly do not render Applicants' claimed invention *prima facie* obvious.

Claims 67 and Dependent Claims

Claim 67 recited moving a substrate relative to a product flow to cover a selected portion of the substrate and heating the coated substrate to form a patterned dense material. Since none of the references alone or combined teach or suggest either the moving step or the heating step, the combined teachings of the Börner patent, the Bi patent and the Rao patent clearly do not render Applicants' claimed invention *prima facie* obvious.

Claim 71

Claim 71 recites the deposition of two coating layers and the heat treatment to form two dense coating layers. None of the cited references alone or combined teach either of these steps. Therefore, the combined teachings of the Börner patent, the Bi patent and the Rao patent clearly do not render Applicants' claimed invention *prima facie* obvious.

Summary

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Since the combined teachings of the Börner patent, the Bi patent and the Rao patent do not render any of Applicants' claims *prima facie* obvious, Applicants respectfully request withdrawal of the rejection of claims 18-29, 33-42, 47-51, 53-57 and 59-61 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,032,871 to Börner et al. (the Börner patent) in view of the Bi patent and the Rao patent.

Rejection Over Börner et al., Akedo et al. Bi et al. and Rao et al.

The Examiner rejected claims 42-54 under 35 U.S.C. §103(a) as being unpatentable over the Börner patent, in view of the Akedo patent, the Bi patent and the Rao patent. These claims have all been canceled, so the rejection of these claims is presently moot. Applicants respectfully request withdrawal of the rejection of claims 42-54 under 35 U.S.C. §103(a) as being unpatentable over the Börner patent, in view of the Akedo patent, the Bi patent and the Rao patent.

Rejection Over Bi et al. and Carey, Jr.

The Examiner rejected claims 18-22, 26-29, 33-42, 44, 46-51, 53 and 54 under 35 U.S.C. § 103(a) as being unpatentable over the Bi patent in view of U.S. Patent 4,011,067 to Carey, Jr (the Carey patent). This rejection was reversed by the Board of Patent Appeals and Interferences. Therefore, this rejection does not need to be considered further.

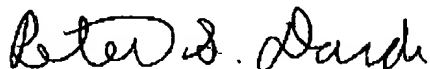
CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

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The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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